

## REMARKS

The Examiner is thanked for the Office Action of February 13, 2009. This request for reconsideration is intended to be fully responsive thereto.

### REJECTIONS UNDER 35 U.S.C. 102 (e)

Claims 16-19, 21-26 were rejected under 35 U.S.C. 102 (e) as being anticipated by Murray et al. (Murray) US Patent Application Publication No. 2006/0106835. The Examiner rejected claims 16-19 and 21-26 basically suggesting that Murray discloses every element of the rejected claims. The Applicant respectfully disagrees.

Murray is a system and methods for rapid unloading and reorganization of hierarchical databases generally for IMSDB of IBM. In Murray, overflow and the window blocks are progressively read into memory at every cylinder within the hard disk drive, and the calculation of the RBA for the segment is conducted to determine the new address. Also, the cylinders are treated as free space so as to efficiently use the memory device and efficiently perform the reorganization.

The present invention is specially invented for reorganizing the database system disclosed in the US Patent No. 6415375 (375) and 6654868 (868). 375 patent eliminated the requirement of hierarchical database index and provides a flat location tables keeping address of blocks to be stored in the data record while having conventional index-like functions by performing binary search on the location tables.

Therefore, Murray and the present invention are completely different inventions and the Applicant responds to the Examiner' office action as follows:

- (1) The Examiner suggested that Murray discloses the system with data records for holding data entries, each data record contains a primary key (paragraph 38, lines 1-4). However, the paragraph 38 of Murray is simply explaining FIG. 2, which illustrates the hierarchical database layer structures, NOT data records for holding data entries where each data record contain the primary key.
- (2) The Examiner suggested that Murray discloses overflow blocks linked to the

primary block (paragraph 39, lines 1-5). However, the paragraph 39 is simply explaining FIG. 3, which illustrates unloading IMSDB to a single cylinder, and is completely unrelated to what the Examiner suggested.

- (3) The Examiner suggested that Murray discloses a current location table and a new location table for containing in contiguous regions entries describing the addresses of the primary blocks (paragraph 12, lines 1-7). However, this is simply unrelated to Claim 16-19, 21-26 as this section talks about the hierarchical database index and the present invention does not use the hierarchical database index. Also, this section does not describe the location table and primary block.
- (4) The Examiner suggested that Murray discloses a current location table reorganization pointer that indicates through which entry in the current location table reorganization has completed (paragraph 12, lines 7-15). However, the term "new location" here simply means "new address", NOT "location table". The present invention uses the table with block addresses without hierarchy.
- (5) The Examiner suggested that Murray discloses a new location table reorganization pointer that indicates through which entry in the new location table reorganization has completed (paragraph 14, lines 1-7). However, the paragraph 14 simply explains the conventional database reorganization, and no such limitation is found there.
- (6) The Examiner suggested that Murray discloses a current location table final pointer that indicates the final position used by that location table (paragraph 15, lines 1-6). However, the paragraph 15 simply explains the conventional database reorganization, and no such limitations are found there.
- (7) The Examiner suggested that Murray discloses a database reorganization system wherein the database reorganization system is configured to sequentially write entries in the current location table to the new location table (paragraph 17, lines 1-7). However, the hierarchical relation is explained as twin forward and backward pointers, and there is no description as to the sequential writing of the entries in the current location table to the new location table.
- (8) The Examiner suggested that Murray discloses where any overflow block is present,

to delink said overflow blocks, creating new entries corresponding to the primary blocks and adding the new entries to the new location table (paragraphs 17-18). However, again this is reorganization for hierarchical database, where the region currently being used for reorganization cannot be used and Murray indicated that the reorganization takes over 1 day. No indication or suggestion of “adding the new entries to the new location table”.

- (9) The Examiner suggested that Regarding Claim 18, Murray discloses a database comprising a first means further comprising: a first means for, upon receipt of a database reorganization command, creating a new location table in addition to the current location table (paragraph 19, lines 1-7). However, again this is reorganization for hierarchical database, where the region currently being used for reorganization cannot be used and Murray indicated that the reorganization takes over 1 day. No indication or suggestion of “adding the new entries to the new location table”.
- (10) The Examiner suggested that Murray discloses a second means for sequentially writing entries in the current location table to the new location table and, when an overflow blocks linked to a primary block is detected, delinking that overflow blocks, adding new entries to the new location table, and rendering the overflow blocks as new primary blocks (paragraph 20). However, this paragraph only suggests reading into memory per cylinder. No indication or suggestion of “adding new entries to the new location table”.
- (11) The Examiner suggested that regarding Claim 19, Murray discloses a database reorganization system further comprising: shifting before and after records in primary blocks and eliminating fragmentation when a storage rate in primary blocks falls outside a range of predetermined values (Paragraph 23, lines 1-7). However, this paragraph is about the initial loading when segments within a record are physically stored in hierarchical sequence, and no description can be found for shifting before and after records in primary blocks and eliminating fragmentation when a storage rate.
- (12) The Examiner suggested that Murray suggested sequentially writing entries in the

current location table to the new location table (paragraph 23, lines 8-16).

However, this paragraph explains RBA calculation and no indication or teaching exists as to the sequential writing entries in the current location table to the new location table.

- (13) The Examiner suggested that regarding Claim 21, Murray discloses a database reorganization system further comprising: when retrieving a record with the primary key during reorganization, evaluating whether the target primary key with the value is greater or less than the primary key of the record contained in the primary block and the overflow blocks that the reorganization pointers is pointing to (paragraph 44). However, this paragraph also talks about unloading per cylinder and no indication or suggestion exists for retrieving a record with the primary key during reorganization.
- (14) The Examiner suggested that Murray when the target key is evaluated to be greater than or equal to the primary key of the record stored in the block that the reorganization pointer is pointing to, using the current location table to retrieve the target record (paragraphs 44). However, there is no target key evaluated to be greater or equal to the primary key of the record.
- (15) The Examiner suggested that Murray when the target primary key is evaluated to be less than that primary key, using the new location table to retrieve the target record (paragraph 44). However, again there is no target key evaluated to be greater or equal to the primary key of the record.
- (16) The Examiner suggested that Regarding claim 22, Murray discloses a database reorganization system, comprising: data records for holding data containing primary keys and alternate keys (Paragraph 48, lines 1-6). However, here, D will be deemed to be 1 "unit" in size, while segments of type B will be deemed to be 2 "units" in size, and therefore the segment size is "unit" and no indication or suggestion can be found as to data containing primary keys and alternate keys.
- (17) The Examiner suggested that Murray discloses alternate-key entries that hold data entries, each alternate-key entry comprises an alternate key and a primary key (Paragraph 48, lines 6-11). However, those of skill will recognize the use of

simple unit denotations as being illustrative of segment size, and therefore the segment size is "unit".

- (18) The Examiner suggested that Murray discloses alternate-key blocks for containing the alternate-key entries (paragraph 50, lines 1-6). However, this paragraph talks about the complexity of inter-segment pointers of access method HIDAM, and no indication or suggestion can be found for alternate-key blocks for containing the alternate-key entries.
- (19) Murray discloses alternate-key overflow blocks linked to the alternate-key blocks (paragraph 50, lines 6-11). However, the paragraph indicated that there are many other potential pointers implicit but not shown in the depiction, which is an explanation of PTF and PCF pointers. The present invention is not related to PTF and PCF pointers.
- (20) The Examiner suggested that Murray discloses current alternate-key location table and new alternate-key location tables for containing alternate-key location table entries in contiguous regions (Paragraph 54, lines 1-9). However, the paragraph also states that as the first segment is unloaded from the data space, the determination of the future RBA is made and also indicates about the Advance RBA Calculation. The paragraph also mentioned that the determined block number is multiplied by the block size. No indication or suggestion regarding a current alternate-key location table.
- (21) The Examiner suggested that Murray discloses a current alternative key location table reorganization pointer for current alternate-key location table which indicates a progress of recognition of the alternate-key location table and alternate-key blocks for the current alternate-key location tables (paragraphs 55, lines 1-7). However, the paragraph talks about ARC and RBA and not related to the current alternate-key location table.
- (22) The Examiner suggested that Murray discloses an alternative key final pointer that is provided to the current alternative key location table to indicate the final position used by the alternative key location table (paragraph 56). However, this paragraph relates to that the proxy counter is set up to be able to indicate

available space, and no indication or suggestion exists for an alternative key final pointer.

- (23) The Examiner suggested that Regarding Claim 23, Murray discloses a database reorganization system comprising the steps of sequentially writing entries in current alternate-key location tables to a new alternate-key location table and, where an alternate-key overflow blocks exists, delinking the alternate-key overflow blocks, creating new alternate-key location table entries corresponding to the alternate-key blocks and adding new alternate-key location table entries to a new alternate-key location table (paragraph 59). However, FIG. 6A illustrates in more detail RBA table and the counter is shown indicating a space available count. Here, the counter is used to show available space size. Therefore, no indication or suggestion as to alternate-key location table and an alternate-key overflow blocks and creating new alternate-key location table entries.
- (24) The Examiner suggested that regarding Claim 24, Murray discloses a database reorganization system further comprising: upon receipt of a database reorganization command, creating a new alternate-key location table in addition to the current alternate-key location table (paragraph 12). However, this paragraph teaches the problems of the reorganization. However, this section suggests the problem of reorganization and does not disclose or suggest creating a new alternate-key location table in addition to the current alternate-key location table.
- (25) The Examiner suggested that Murray discloses sequentially writing entries in the current alternate-key location table to the new alternate-key location table and, when alternate-key overflow block linked to alternate-key block is detected, delinking that alternate-key overflow block, adding new alternate-key location table entries to new alternate-key location table and rendering these as new alternate-key blocks (Paragraph 59). However, as illustrated in FIG. 6A, this paragraph talks about RBA table and explains that the counter is shown indicating a space available count. Therefore, nothing here relates to alternate-key location table, alternate-key overflow block and alternate-key location table

entries.

- (26) The Examiner suggested that regarding Claim 25, Murray discloses a database reorganization system further comprising the steps of: shifting before and after records in the alternate-key blocks and eliminating fragmentation when the storage rate in the alternate-key blocks falls outside a range of the specified values (Paragraph 23, lines 1-7). However, this paragraph explains the physical process of unloading IMSDB, and therefore there is no relation to what the Examiner suggested here.
- (27) Further, the Examiner suggested sequentially writing entries in the current alternate-key location table to new alternatekey location table (Paragraph 23, lines 8- 16). However, this paragraph also talks about RBA and counter and NOT alternate-key location table.
- (28) The Examiner suggested that regarding Claim 26, Murray discloses a database reorganization systems further comprising the steps of: when retrieving a record with the alternate key during reorganization, evaluating whether the target alternate key value is greater or less than the alternate key of the entry contained in the alternate-key block that indicated by at least one of said reorganization pointer is pointing (Paragraph 44). This paragraph talks about scan cylinders window 46 depicting the initial read of a SCAN cylinders amount of blocks and does not relate to retrieving a record with the alternate key.
- (29) Finally, the Examiner suggested that Murray discloses using the current alternate-key location table to retrieve the target entry when the target alternate key is evaluated by the comparative means to be greater than or equal to the alternate key of the entry stored in the alternate-key blocks of that the reorganization pointer is pointing, using the new alternate-key location table to retrieve the target entry when the target alternative key is evaluated to be less than the value of that alternate key (Paragraph 59). However, this paragraph relates to RBA table and NOT current alternate-key location table to retrieve the target entry.

The currently Claims 16-19 and 21-26 clarifies the characteristics of the present

invention, i.e., the current location table and the new location table, the current location table reorganization pointer, the new location table reorganization pointer, and the current location table final pointer. The Applicant reviewed and checked all paragraphs that the Examiner suggested in the office action; however, none of these features and limitations are disclosed or suggested by Murray.

#### Conclusion

Because of the above-identified and fully discussed differences, it is respectfully submitted Claims 16-19 and 21-26 are now in condition for allowance and notice to that effect is respectfully requested.

Should the Examiner believe further discussion regarding the above claim language would expedite prosecution they are invited to contact the undersigned at the number listed below.

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